

CLAIMS

1. A processor comprising:

a sensor which measures a temperature of a certain block of the processor; and

a temperature estimation unit which estimates temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor.

2. The processor according to claim 1, further comprising a storing unit which stores information on differences in temperature between the plurality of heat generating blocks and the certain block for situations where a load is applied to the processor, and

wherein the temperature estimation unit estimates the temperatures of the plurality of heat generating blocks by referring to the information on the differences in temperature stored in the storing unit.

3. The processor according to claim 2, wherein:

the storing unit contains information on a correspondence between the detected temperature of the certain block and the temperatures of the plurality of heat generating blocks for situations where a maximum load is applied to the entire processor; and

the temperature estimation unit estimates the temperatures of the plurality of heat generating blocks by referring to the information on the correspondence for situations where the maximum load is applied.

4. The processor according to claim 3, wherein:

the storing unit further contains information on a correspondence between the temperature of the certain block detected by the sensor and the temperatures of the plurality of heat generating blocks for situations where a load is individually applied to the plurality of heat generating blocks, respectively; and

the temperature estimation unit estimates the temperatures of the plurality of heat generating blocks individually by referring to the information on the correspondence for situations where the load is applied individually.

5. The processor according to claim 4, further comprising a heat amount measurement unit which measures an overall amount of heat of the processor, and

wherein the temperature estimation unit estimates the temperatures of the plurality of heat generating blocks by switching between the correspondence for situations where the maximum load is applied and the correspondence for situations where the load is applied individually, depending on the overall amount of heat measured by the heat amount measurement unit.

6. The processor according to claim 1, further comprising a load measurement unit which measures the plurality of heat generating blocks for respective operating loads, and

wherein the temperature estimation unit corrects the estimated temperatures of the plurality of heat generating blocks in accordance with the operating loads measured by the load measurement unit.

7. The processor according to claim 1, wherein the sensor is placed in a position where estimation errors in the temperatures of the plurality of heat generating blocks

estimated based on the temperature of the certain block detected by the sensor become relatively small.

8. The processor according to claim 1, further comprising a load distribution unit which allocates a load among operation blocks of the processor based on the temperatures estimated by the temperature estimation unit.

9. The processor according to claim 1, further comprising an operating frequency control unit which exercises control for lowering an operating frequency of the processor when the temperatures estimated by the temperature estimation unit exceed a predetermined threshold.

10. A temperature estimation method comprising:
acquiring, in advance, information on a correspondence between a temperature of a certain block of a processor detected by a sensor and temperatures of a plurality of heat generating blocks of the processor for situations where a load is applied to the processor; and

estimating the temperatures of the plurality of heat generating blocks from the temperature of the certain block detected by the sensor by referring to the information on the correspondence.

11. The temperature estimation method according to claim 10, wherein a load is allocated among operation blocks of the processor based on the temperatures estimated.

12. The temperature estimation method according to claim 10, wherein control for lowering an operating frequency of the processor is exercised when the estimated temperatures exceed a

predetermined threshold.

13. A temperature estimation method comprising:

estimating a maximum temperature of a processor from a temperature of a certain block of the processor detected by a sensor, based on a difference between the detected temperature and a temperature of a heat generating block of the processor for situations where a maximum load is applied to the processor, if an amount of heat generation of the entire processor is relatively large; and

estimating the maximum temperature of the processor from the temperature of the certain block detected by the sensor, based on a difference between the detected temperature and the temperature of the heat generating block for situations where a load is applied to the heat generating block selectively, if the amount of heat generation is relatively small.

14. The temperature estimation method according to claim 13, wherein the estimated maximum temperature of the processor is corrected in accordance with an operating load on the heat generating block.

15. The temperature estimation method according to claim 13, wherein a load is allocated among operation blocks of the processor based on the temperature estimated.

16. The temperature estimation method according to claim 13, wherein control for lowering an operating frequency of the processor is exercised when the estimated temperature exceeds a predetermined threshold.

17. A temperature estimation method comprising:

applying a random load to a processor;

measuring differences between a temperature of a certain block of the processor detected by a sensor and temperatures of a plurality of heat generating blocks of the processor;

determining estimation errors in estimating the temperatures of the plurality of heat generating blocks from the detected temperature; and

adjusting a position of the certain block for the sensor to detect the temperature thereof, so that the estimation errors become relatively smaller.

18. A processor system comprising:

a sensor which measures a temperature of a certain block of a processor; and

a temperature estimation unit which estimates temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor.

19. The processor system according to claim 18, further comprising a load distribution unit which allocates a load among operation blocks of the processor based on the temperatures estimated by the temperature estimation unit.

20. The processor system according to claim 19, being a multiprocessor system including a plurality of processors, and wherein

the load distribution unit allocates the load among the plurality of processors based on the temperatures estimated by the temperature estimation unit.

21. The processor system according to claim 18, further comprising an operating frequency control unit which exercises

control for lowering an operating frequency of the processor when the temperatures estimated by the temperature estimation unit exceed a predetermined threshold.

22. The processor system according to claim 21, being a multiprocessor system including a plurality of processors, and wherein the operating frequency control unit exercises control for lowering the operating frequency of at least one or some of the plurality of processors, the temperatures of the one or some processors estimated by the temperature estimation unit exceeding the predetermined threshold.

23. A temperature estimation device comprising:

a sensor which measures a temperature of a certain block of a processor; and

a temperature estimation unit which estimates temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor.

24. An information processing apparatus comprising:

a sensor which measures a temperature of a certain block of a processor; and

a temperature estimation unit which estimates temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor.

25. A program for making a computer execute:

measuring a temperature of a certain block of a processor; and

estimating temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor.